

REMARKS

This is in response to the Office Action mailed on September 10, 2003, and the references cited therewith.

Claims 77, 84, 86, 88, 89, 92, 95, 96, 101, 113, 116, 117, 119, 127-129, 131, 132, 133, 136, 137, 143 and 147 are amended; claims 81, 82, 85, 87, 90, 91, 94, 99, 100, 103, 104, 112, 115, 125, 126, 141, 145 and 146 are canceled; and claims 153-157 are added; as a result, claims 77-80, 83, 84, 86, 88, 89, 92, 93, 95-98, 101, 102, 105-111, 113, 114, 116-124, 127-140, 142-144 and 147-157 are now pending in this application.

Claim 94 is resubmitted as claim 153 for clarity, because the brackets form a proper part of the claim and are not indicative of changes. Claim 125 is resubmitted as claim 154 for clarity, because the amendments to the claim are substantial. The amendments are supported by the specification. The Examiner is requested to note that the amendments to the claims, as presented herein, do not surrender any equivalents to which the other substituents may be entitled. No new subject matter is added.

Claim Objections

The Examiner has made several objections due to various informalities;

Claim 77 has been amended to change “(d)” to -- (b) -- in line 13. In claim 84, the phrase “A and A' are as defined in claim 77” has been deleted, the term macrodiol added, and the claim amended to indicate that R₅ and R₆ are divalent radicals, as recommended by the Examiner. In claim 86, the terms “R and R” have been amended to -- A and A' --. Claim 87 has been cancelled. In claim 88, the phrase “R₅ and R₆ are as defined in claim 84” has been deleted. In claim 92, the term “A is” has been amended to -- A and A' are --. In claim 94 (presented herein as claim 153), the “O” atom has been added to the carbonate linkage, the R₁ to R₇ terms are expressed, and the phrase “A and A' are as defined in formula (I) in claim 77” has been deleted. In claim 96, the phrase “R₁ to R₉, m, y, x and z are as defined in formula (IV) in claim 94” has been deleted. In claim 101 the phrases “m is as defined in formula (I) in claim 77; and n is as

defined in formula (I) in claim 77" have been deleted. In claim 116, the R₁ to R₇ terms are expressed. Claim 146 has been cancelled.

Applicants believe that the amendments/corrections to the claims noted herein overcome the Examiners objections.

§101 Rejection of the Claims

Claim 145 was rejected under 35 USC § 101 as allegedly the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process. This claim has been cancelled. Accordingly the rejection is believed moot.

112 Rejection of the Claims

Claims 84-93, 105-108, 116, 132 and 145 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicants have amended claim 84, to cancel to indicate that R₅ and R₆ are divalent radicals, as recommended by the Examiner. In addition, claim 84 has been amended to indicate that R₇ is oxygen. Claim 94 (presented herein as claim 153), the "O" atom has been added to the carbonate linkage, the R₈ and R₉ terms are amended to clarify that they are divalent. In claim 116, the "q" term has been amended to -- p --. Claim 132 was amended to insert a definition of the term "non-elastomeric" and clarify the claim it is respectfully submitted that the skilled person in the art will understand the meaning and scope of this term in the present context. Support for this amendment can be found at original page 14, lines 34 to 36. Claim 145 has been cancelled.

Accordingly, it is respectfully requested that the rejection under 35 USC § 112 be withdrawn.

§102 Rejection of the Claims

Claims 77-91, 101-113, 115-121, 137-146 and 152 were rejected under 35 USC § 102(b) as allegedly being anticipated by Gunatillake (WO 99/03863 "the '863 application"). The Examiner asserts that the '863 application discloses a polyurethane composition derived from a

sort segment macrodiol, a diisocyanate and a chain extender or chain extender composition. This rejection is respectfully traversed.

Claim 77 has been amended to provide a molecular weight range for the silicon-based macrodiol, silicon-based macrodiamine or polyether of formula (I) in component (a) of 300 to 700. Applicants are not able to find this limitation in the '863 application. Further, it is believed that the silicon-based macrodiols disclosed in the examples of the '863 application have molecular weights in excess of 700.

Claims 77, 81-82, 101-104, 109-113, 117-121, 123-124, 137-146 and 152 were rejected under 35 USC § 102(b) as allegedly being anticipated by Hayashi (832) (U.S. Patent No. 5,139,832 "the '832 patent") and/or Hayashi (U.S. Patent No. 5,049,591 "the '591 patent"). This rejection is respectfully traversed.

Applicants have reviewed the '832 patent and the '591 patent and are unable to find any reference to the silicone macrodiols of the (A) group in claim 77. In addition, applicants are unable to find a reference to the silicone containing chain extenders of the (B) group in claim 77.

Claims 77-84, 85, 90-91, 101-104, 109-110, 112-114, 117-121, 125-128, 137-146 and 152 were rejected under 35 USC § 102(b) as allegedly being anticipated by Pudleiner (U.S. Patent No. 5,430,121, "the '121 patent"). This rejection is respectfully traversed.

Applicants have reviewed the '121 patent and submit that the '121 patent does not disclose the specific polyurethane polymers defined in present claims, *e.g.*, polymers having the required molecular weight range of 300 to 700, of the silicon-based macrodiol, silicon-based macrodiamine and polyether of formula (I), in the (A) group in claim 77, or the specific amounts of the chain extenders, specifically, the silicon-containing chain extender in the (B) group in claim 77.

Claims 77, 81-82, 101-104, 109-114, 117-121, 125-129, 137-146 and 152 were rejected under 35 USC § 102(b) as allegedly being anticipated by Meijs (U.S. Patent No. 5,393,858, "the '858 patent). This rejection is respectfully traversed.

Applicants have reviewed the '858 patent and submit that the '858 patent does not disclose the specific polymers defined in present claim 77. Specifically, applicants cannot find a disclosure of the silicon-based macrodiol, a silicon-based macrodiamine and polyether combinations of formula (I) of the (A) group, or the specific amounts of the chain extenders, *e.g.*, a silicon-containing chain extender, in the (B) group.

Claims 77-93, 101-106, 108-114, 117-121, 125-128, 137-146 and 152 were rejected under 35 USC § 102(b) as allegedly being anticipated by Hideyuki (JP 04-248826 "the '826 application"). This rejection is respectfully traversed.

Claim 77 has been amended to provide a molecular weight range for the silicon-based macrodiol, silicon-based macrodiamine or polyether of formula (I) in component (a) of 300 to 700. Applicants are not able to find this limitation in the '826 application. Further, the '826 application discloses that the tertiary amino group contained in said polyurethane or polyurethane urea is quaternised by an alkyl group.

Claims 77-91, 101-106, 108-114, 117-121, 125-126, 128, 137-146 and 152 were rejected under 35 USC § 102(b) as allegedly being anticipated by Ito (JP 63-179916 "the '916 application"). This rejection is respectfully traversed.

Claim 77 has been amended to provide a molecular weight range for the silicon-based macrodiol, silicon-based macrodiamine or polyether of formula (I) in component (a) of 300 to 700. Applicants are not able to find this limitation in the '916 application. Further, the silicon-based macrodiols disclosed in the example of the '916 application has a molecular weight of 2000. The Examiner refers to a translation of the '916 application. However, applicants' records do not indicate that such a translation was received.

Claims 77-87, 88, 89, 90, 91, 101-113, 117-121, 137-146 and 152 were rejected under 35 USC § 102(b) as allegedly being anticipated by Meijs (405) (WO 98/13405, "the '405 application"). This rejection is respectfully traversed.

Claim 77 has been amended to provide a molecular weight range for the silicon-based macrodiol, silicon-based macrodiamine or polyether of formula (I) in component (a) of 300 to

700. Applicants are not able to find this limitation in the '405 application. Further, it is believed that the silicon-based macrodiols disclosed in the examples of the '405 application have molecular weights in excess of 700.

Accordingly, it is respectfully requested that the rejections of the claims under 35 U.S.C § 102, be withdrawn.

§103 Rejection of the Claims

Claims 122-124 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Gunatillake, the '863 application. This rejection is respectfully traversed.

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the Examiner does not establish a *prima facie* case, the applicant is under no obligation to submit evidence of non-obviousness. M.P.E.P. §2142. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. M.P.E.P. §2142.

Applicants submit the there is no teaching or suggestion to prepare the polymers claimed based on the disclosure of the '863 application. Applicants note that the specific MW range for the silicone based macrodiol or macrodiamine recited in claim 77 is not found in the '863 application. Further, it is submitted that there is no teaching or suggestion to modify the molecular weights disclosed in the '863 application to those recited in the instant claims.

Furthermore, it is submitted that the '863 application fails to disclose shape memory polymers having a diisocyanate and a specific ratio of diol or diamine chain extender relative to silicon-containing chain extender as set out under (B) of claim 77. As the rejected claims depend from claim 77, and because these elements are not disclosed in the cited document, it is submitted that these claims are not obvious. Finally there is no teaching or suggestion to modify the disclosure of the '863 application to prepare the polymers of the instant claims. Thus, applicants submit that the claims are not obvious in view of the disclosure of the '863 application

Claims 77-91, 101-104, 105, 107, 109-113, 115-121, 137-146 and 152 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Lee (U.S. Patent No. 5,911,737 "the '737 patent") in view of Gunatillake. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that the combination of Lee, the '737 patent, in view Gunatillake, the '863 application, fails to provide a *prima facie* case of obviousness. As admitted by the Examiner, the '737 patent is silent as to the specific type of polyurethane. As discussed hereinabove the '863 application does not meet all the limitations of the claims. Further, it is submitted that there is no teaching or suggestion to modify the disclosure of the '863 application or the disclosure of the '737 patent to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious over the combination of the disclosure of the '737 patent in view of the disclosure of the '863 application.

Claim 122 was rejected under 35 USC § 103(a) as allegedly being unpatentable over Hayashi (832), the '832 patent. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that the '832 patent is not believed to disclose the silicone macrodiols of the (A) group in claim 77. In addition, applicants are unable to find a reference to the silicone containing chain extenders of the (B) group in claim 77. Further, it is submitted that there is no teaching or suggestion to modify the disclosure of the '832 patent to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious in view of the disclosure of the '832 patent.

Claim 122 was rejected under 35 USC § 103(a) as allegedly unpatentable over Pudleiner, the '121 patent. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that the '121 patent does not disclose the specific polymers defined in present claims, *e.g.*, having a silicon-based macrodiol, silicon-based macrodiamine and polyether of formula (I), with the required molecular weight range of 300 to 700, of the in the (A) group in claim 77, or the specific amounts of the chain extenders, specifically, the silicon-containing chain extender in the

(B) group in claim 77. Further, it is submitted that there is no teaching or suggestion to modify the disclosure of the '121 patent to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious in view of the disclosure of the '121 patent

Claims 122-124 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Meijis (858), the '858 patent. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that the '858 patent does not disclose the specific polymers defined in present claim 77. Specifically, applicants cannot find a disclosure of the silicon-based macrodiol, a silicon-based macrodiamine and polyether combinations of formula (I) of the (A) group, or the specific amounts of the chain extenders, *e.g.*, a silicon-containing chain extender, in the (B) group. Further, it is submitted that there is no teaching or suggestion to modify the disclosure of the '858 patent to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious in view of the disclosure of the '858 patent.

Claims 107 and 122-124 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Hideyuki, the '826 application. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that the claims provide a molecular weight range for the silicon-based macrodiol, silicon-based macrodiamine or polyether of formula (I) in component (a) of 300 to 700. This range is not disclosed or suggested in the '826 application. Further, the '826 application discloses that the tertiary amino group contained in said polyurethane or polyurethane urea is quaternised by an alkyl group. Further, it is submitted that there is no teaching or suggestion to modify the disclosure of the '826 application to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious in view of the disclosure of the '826 application.

Claims 122-124 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Ito, the '916 application. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that the claims have been amended to provide a molecular weight range for the silicon-

based macrodiol, silicon-based macrodiamine or polyether of formula (I) in component (a) of 300 to 700. Applicants are not able to find this limitation in the '916 application. Further, the silicon-based macrodiol disclosed in the example of the '916 application has a molecular weight of 2000. Further, it is submitted that there is no teaching or suggestion to modify the disclosure of the '916 application to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious in view of the disclosure of the '916 application.

Claims 77, 79-82, 101-104, 109-113, 117-121, 123-132, 137-146 and 152 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Ward (U.S. Patent No. 5,814,705 "the '705 patent") in view of Gunatillake, the '863 application. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that the combination of Ward the '705 patent, in view Gunatillake, the '863 application, fails to provide a *prima facie* case of obviousness. As admitted by the Examiner, the '737 patent is silent as to the specific type of polyurethane. As discussed herein above the '863 application does not meet all the limitations of the claims. Further, it is submitted that there is no teaching or suggestion to modify the disclosure of the '863 application or the disclosure of the '705 patent to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious over the combination of the disclosure of the '705 patent in view of the disclosure of the '863 application.

Claims 122-124 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Meijs (405) the '405 application. This rejection is respectfully traversed.

The requirements for a *prima facie* case of obviousness are provided above. Applicants submit that as amended, the claims provide a molecular weight range for the silicon-based macrodiol, silicon-based macrodiamine or polyether of formula (I) in component (a) of 300 to 700. it is submitted that this limitation is not found in the '405 application. Further, it is believed that the silicon-based macrodiols disclosed in the examples of the '405 application have molecular weights in excess of 700. It is submitted that there is no teaching or suggestion to

modify the disclosure of the '405 application to obtain the polymers of the instant claims. Thus, applicants submit that the claims are not obvious in view of the disclosure of the '405 application.

Accordingly, it is respectfully requested that the rejections of the claims under 35 U.S.C § 103, be withdrawn.

Allowable Subject Matter

Applicants note with appreciation the Examiner's indication that 94-100 would be allowable if rewritten to overcome the objections under 35 USC § 112 with the limitations of the base claim. Applicants submit that, in view of the amendments and remarks herein that the objections under 35 U.S.C. § 102, under 35 U.S.C. § 103 and under 35 U.S.C. § 112 are overcome and that all claims are believed to be in condition for allowance. Thus, it is respectfully requested that the claims pass to issue.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6968 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 10th day of March, 2004.

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